

Message

From: Schock, Michael [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8AECC78BFE4A4B1AAEA5DB7146ABB41F-SCHOCK, MICHAEL]
Sent: 12/19/2019 10:47:51 PM
To: Cornwell, David Alan [david.cornwell@essie.ufl.edu]
Subject: RE: Petone

Sure. I mentioned Mo because we almost never would look for it, ourselves, it would be such a low probability. It may not be, but right now, it fits like a glove.... Have a good weekend, I'm off tomorrow.

From: Cornwell, David Alan <david.cornwell@essie.ufl.edu>
Sent: Thursday, December 19, 2019 5:46 PM
To: Schock, Michael <Schock.Michael@epa.gov>
Subject: RE: Petone

Thanks. I'll digest this tomorrow! We have done microprobe and EDS. I can send or put in download link tomorrow.

From: Schock, Michael <Schock.Michael@epa.gov>
Sent: Thursday, December 19, 2019 5:41 PM
To: Cornwell, David Alan <david.cornwell@essie.ufl.edu>
Subject: RE: Petone

[External Email]

We definitely agree on the quartz and cerussite. We are also confident there really isn't any indication of a lead orthophosphate phase of any kind, or PbO₂. In our experience, scrutinyite is rarely if ever by itself in a drinking water pipe, without plattnerite being there. So, we concur on the absence of Pb(IV) phases, too. The peaks for cerussite are pretty sharp, so the polyphosphate hasn't messed up the crystallinity. But then, cerussite would typically mean undesirably high lead release.

Have you done elemental analysis yet on any of these layers? Do you have any of them mounted for quick EDS analysis? If so, have them look for molybdenum. We don't particularly believe it could be there, but the unknown peaks remarkably match a Pb-Mo oxide phase. Molybdenum often/usually occurs as a divalent oxyanion in oxidizing conditions, which would be reactive with Pb(II). But, of course, it does not make sense to us where Mo would come from. Mike D will look some more at it tomorrow, but it is interesting what is NOT there, as well as what is. Whatever it is, we're pretty sure of the crystal system it must be, with maybe narrows the possibilities from tens of thousands to hundreds....

--Mike

From: Cornwell, David Alan <david.cornwell@essie.ufl.edu>
Sent: Thursday, December 19, 2019 4:08 PM
To: DeSantis, Mike <desantis.mike@epa.gov>
Cc: Lytle, Darren <Lytle.Darren@epa.gov>; Schock, Michael <Schock.Michael@epa.gov>
Subject: RE: Petone

FYI, below is what the Prof at UF I work with indicated. Peotone wells had very high Ca, fair amount of iron and they used a polyphosphate. I asked him particularly to look for lead 4

Cerussite was the dominant lead phase in all of these samples. I was not able to confidently identify any other lead phases except for the lead metal in the "loose" samples and litharge in P2, L4. A small amount of litharge may have also been present in P1, L1 but it was not enough to make a confident identification. There was little to no evidence of

plattnerite. Scrutinyite is a little harder, as the peaks that are present in some of these samples from minerals occurring in abundance (cerussite, litharge) could be obfuscating the presence of a very small amount of this mineral in some of these diffractograms. The most diagnostic peak from scrutinyite in this mixture of potential lead minerals would be around 2.72 and there is an unknown mineral with a peak occurring there that is much higher in intensity than what would be expected from scrutinyite. There was no evidence of the presence of lead apatites (hydroxylpyromorphite).

There are some major peaks occurring in these samples that I could not identify, even after consulting with Willie, such as those occurring at 3.24, 1.65 and 2.715. I do not, however, believe these to be from lead phases.

From: DeSantis, Mike <desantis.mike@epa.gov>
Sent: Thursday, December 19, 2019 4:03 PM
To: Cornwell,David Alan <david.cornwell@essie.ufl.edu>
Cc: Lytle, Darren <Lytle.Darren@epa.gov>; Schock, Michael <Schock.Michael@epa.gov>
Subject: RE: Petone

[External Email]

Got them downloaded as well. I'll take a look...

From: Schock, Michael <Schock.Michael@epa.gov>
Sent: Thursday, December 19, 2019 3:47 PM
To: Cornwell,David Alan <david.cornwell@essie.ufl.edu>
Cc: DeSantis, Mike <desantis.mike@epa.gov>; Lytle, Darren <Lytle.Darren@epa.gov>
Subject: RE: Petone

I got them downloaded just fine. Thank you!!! We'll be in touch.

From: Cornwell,David Alan <david.cornwell@essie.ufl.edu>
Sent: Thursday, December 19, 2019 3:37 PM
To: Schock, Michael <Schock.Michael@epa.gov>
Cc: DeSantis, Mike <desantis.mike@epa.gov>; Lytle, Darren <Lytle.Darren@epa.gov>
Subject: RE: Petone

See if you can get this. if not we can get Mike and UF directly in touch

<https://1drv.ms/u/s!AmoVnPomgWu6kXdtGOt3x4NrxZQ?e=44woay>

From: Schock, Michael <Schock.Michael@epa.gov>
Sent: Thursday, December 19, 2019 2:59 PM
To: Cornwell,David Alan <david.cornwell@essie.ufl.edu>
Cc: DeSantis, Mike <desantis.mike@epa.gov>; Lytle, Darren <Lytle.Darren@epa.gov>
Subject: RE: Petone

[External Email]

Oops.... Our crack IT security barrier automatically strips off zip files and .exe files. Could you simply rename the zip file to a .dat file, and re-send it? We'll change it back when we get it. I'm pretty sure we can unzip it. We have a version of Jade, so we should be able to read it fine.

From: Cornwell,David Alan <david.cornwell@essie.ufl.edu>
Sent: Thursday, December 19, 2019 2:52 PM

To: Schock, Michael <Schock.Michael@epa.gov>
Cc: DeSantis, Mike <desantis.mike@epa.gov>; Lytle, Darren <Lytle.Darren@epa.gov>
Subject: RE: Petone

Can you unzip this and use it? he says he manipulates with Match and Jade that I am not familiar with
UF uses a Rigaku instrument

From: Schock, Michael <Schock.Michael@epa.gov>
Sent: Thursday, December 19, 2019 2:23 PM
To: Cornwell,David Alan <david.cornwell@essie.ufl.edu>
Cc: DeSantis, Mike <desantis.mike@epa.gov>; Lytle, Darren <Lytle.Darren@epa.gov>
Subject: RE: Petone

[External Email]

Dave;

Thanks for sending the XRD. Would it be possible to get us the raw data file from the lab for the XRD scan? And let us know the manufacturer of the instrument. That way, I can pass it to Mike DeSantis and he could use it with our normal reference database directly. It's far easier than trying to eyeball peaks and hunt through the reference mineral patterns. Our software can read the raw data files from most contemporary instruments.

--Mike

From: Cornwell,David Alan <david.cornwell@essie.ufl.edu>
Sent: Thursday, December 19, 2019 2:16 PM
To: Schock, Michael <Schock.Michael@epa.gov>
Cc: Lytle, Darren <Lytle.Darren@epa.gov>
Subject: Petone

Hi Mike and Darren, we completed XRD on two Peotone lead pipes. There were some pretty strong peaks we could not identify. Just wondering if you had any ideas?

We before were told Peotone was chloramine and the switch to Kankakee would be to chloramine. But we have been collecting Peotone data and it is free chlorine. So we looked hard for lead 4 but couldn't find any.

Appreciate any thoughts

L1 is water surface.

Dave